

INTEGRATING COMPREHENSIVE TRANSPORTATION PLANNING AND PROJECT DEVELOPMENT PROCESSES: PROBLEM STATEMENT TO PURPOSE AND NEED

Background

The North Carolina Department of Transportation has undertaken a major process improvement with the goal of integrating the long range planning process with the project development process, essentially NEPA and its state counterpart SEPA. In North Carolina the long range planning process is called the Comprehensive Transportation Planning (CTP) process. Through a series of discussions and workshops the department has identified eight potential linkages where work that is done during the CTP process could inform or serve as the starting point for NEPA/SEPA. These eight are:

Long range planning		Project development
Problem Statement	linked to	Purpose and Need
Alternatives analysis	linked to	Alternatives selected for detailed study
Modal alternatives	linked to	Project reasonable & analysis investment feasible modal alternatives
Fatally flawed alternatives	linked to	Alternatives selected for detailed study
Systems level public involvement	linked to	Project level public involvement
Land use integration	linked to	Indirect and cumulative impacts
Community impacts analysis	linked to	Community impacts assessment
Mitigation needs and opportunities	linked to	Mitigation planning and development (NC Ecosystem Enhancement Program)

Overall Integration Approach

The overall approach is based on viewing these as producer (CTP) and customer (NEPA/SEPA) processes. By using this producer-customer framework it allows in-depth discussions of what data, analyses and decisions are available from long range planning that can be useful and value-added for project development.

The department has formed a multi-agency Integration Team that includes representatives from NCDOT's long range planning and environmental review branches (Transportation Planning Branch and the Project Development and Environmental Analysis Branch), federal and state resource agencies, metropolitan planning organizations, rural planning organizations, and the Federal Highway Administration. This team examined of eight the potential linkages during a series of 2-day workshops to determine:

1. Can the data, analysis and/or decisions that are made during the CTP process be used to replace or inform work done during the project development process?
2. If so, what standards or criteria need to be in place during long range planning for the data, analysis, decisions or documentation to be acceptable to the project development process?

Problem Statement to Purpose and Need

In February 2005 the Integration Team began work by examining the potential connection between a systems level “problem statement” to a project level “purpose and need” statement. Over the last two years NCDOT’s Transportation Planning Branch (TPB) has been piloting an effort to create a “systems level purpose and need” statement. However, there have been problems in fitting the systems level data into a NEPA defined purpose and need framework and some difficulty in establishing acceptance of the concept by the project development process participants at both NCDOT and the resource agencies.

For these reasons the Integration Team was re-framed around the concept of developing a “Problem Statement.” The term “problem statement” was selected because it is neutral and has no current definition within the CTP process. The team was given the goal:

To develop a problem statement in the CTP process that can be used as the starting point for NEPA/SEPA. The intent is that this problem statement would:

- Form a substantial core of the NEPA/SEPA required purpose and need statement and
- Save time in preparing and/or agreeing to the purpose and need portion of project development

The Integration Team agreed that the purpose of creating this problem statement is to communicate the context, concept and justification for potential projects included in the CTP.

The team identified eleven categories of information that are available from the CTP process that would be relevant to the goal and purpose outlined. These eleven are:

- History of the project (documented background)
- Overall community vision
- Land use patterns
- Environmental context
- Air quality context
- Justification of need
- Multi-modal considerations
- Linkages within the overall CTP, other community/state plans, other projects
- Identification of overall CTP study area and any sub-area relevant to the project
- Context sensitive concepts
- Documentation of public/stakeholder involvement process

For each of these eleven categories of information the Integration Team identified the relevant CTP-available 1) supporting data collected or created; 2) decision-making by technical or policy bodies; 3) stakeholder involvement; and 4) general concepts for the type of documentation to be provided.

The table below shows the product of the CTP level analysis that is available for incorporation into NEPA analysis.

SUMMARY OF CTP PROBLEM STATEMENT PRODUCT

PRODUCT	DESCRIPTION	COMMENTS
Problem Statement Report	<p>Individual report for selected deficiencies (potential projects) included in the CTP</p> <p>Following categories of information are included:</p> <ul style="list-style-type: none">▪ History of the potential project▪ Community vision context▪ Land use context▪ Environmental context▪ Public involvement▪ Air quality context▪ Linkages to other plans and projects▪ Recommended study area▪ Context sensitive solutions context▪ Multi-modal considerations	<ul style="list-style-type: none">▪ Deficiencies to be detailed in Problem Statement report are selected by the community based on priority and potential for inclusion in the TIP▪ Primarily GIS level environmental data

The Integration Team also developed an implementation plan that details the steps needed to turn their initial discussions and concepts into procedure level guidance on the development of a CTP-based problem statement.

Alternatives Analysis to Alternatives Selected for Detailed Study

For this linkage the Integration Team was organized into producers (CTP) and customers (Merger 01). The goal of this workshop was to document selected alternatives analyzed during CTP process for inclusion in the alternatives selected for detailed study. The intent of documenting these selected alternatives is to:

Form a substantial core of the NEPA/SEPA alternatives selected for detailed study **and**
Save time in preparing and/or agreeing to the alternatives selected for detailed study
portion of project development.

The team identified seven categories of information that are available from the CTP process that could form a substantial core of the alternatives documentation. These seven are:

- Facility characteristics
- Specially administered lands and adopted plans
- Human environment
- Natural environment
- Transportation measures of effectiveness
- Costs and methodology
- Air quality

For each of these seven categories of information the Integration Team identified the relevant CTP-available 1) supporting data collected or created; 2) decision-making by technical or policy bodies; 3) stakeholder involvement; and 4) general concepts for the type of documentation to be provided.

The table below shows the products from the CTP process that would be available to support alternatives selected for detailed study.

SUMMARY OF CTP ALTERNATIVE ANALYSIS PRODUCTS

Product	Description	Comments
Alternatives Recommended for Study Report	<p>Individual report for alternatives considered during the CTP that are recommended for detailed study during NEPA. Following categories of information are included:</p> <ul style="list-style-type: none"> ▪ Transportation evaluation (summary of alternative against the evaluation and measures of effectiveness identified for the CTP) ▪ Facility characteristics ▪ Environmental impacts (human and natural including information included in the ICI summary and the CIA summary developed from previous linkages) ▪ Impact on specially administered lands and adopted plans (for example, tribal lands, wildlife refuge lands, economic development plans, school plans, multi-modal plans, etc.) ▪ Air quality implications 	<p>This report can be developed for any alternative that the local area recommends be included in the NEPA study process. One of its primary purposes, however, is to assure that the “Locally Preferred Alternative” corridor that is included in the CTP is documented for inclusion in the NEPA study.</p> <p>GIS level environmental data is the most likely source for much of what is included in this report.</p>

During the workshop the Integration Team developed an implementation plan that details the steps needed to turn their initial discussions and concepts into procedure level guidance on the development of a CTP-based alternatives analysis. Detailed implementation plans were developed for creating CTP based alternatives analysis documentation; identifying and providing GIS data availability and use; training and education on alternatives/scenarios analysis; and identification and evaluation of best practices for alternatives/scenarios analysis.

Unreasonable Alternatives to Alternatives Selected for Detailed Study

As with all of the integration topics the over-arching goal is to:

To develop documentation of alternatives eliminated in the CTP process that can be used as the starting point for NEPA/SEPA. The intent is that the documentation of CTP based unreasonable alternatives would:

- Form a substantial core of the NEPA/SEPA alternatives selected for detailed study and
- Save time in preparing and/or agreeing to the alternatives selected for detailed study portion of project development.

The team established a specific goal for this linkage: to create a clear record of every CTP identified unreasonable solution, including the opportunities for involvement provided to resource agencies, and other interested parties, in order to reduce time and/or save money in completing the NEPA/SEPA process. The benefits that they saw from creating a tight linkage for this area are:

- Reduce time to deliver transportation improvements to the public
- Save money in both project development and overall project costs
- Clear record of every solution considered
- Opportunity for involvement by resource agencies and other interested parties

Prior to the workshop that team members were asked to provide their definition for “fatally flawed alternatives.” The workshop was opened with a presentation an overview of the responses received. The team then had an open ended discussion with a goal of developing a common understanding among the team members of what the term “fatally flawed alternative” means during the CTP process. One of the outcomes of this discussion was an agreement by the team to use the term “unreasonable alternative” rather than “fatally flawed alternative” during the CTP process.

The team explored seven potential reasons or themes for defining an unreasonable alternative. These seven were:

- Purpose and need
- Impact to natural environment
- Impact to community/cultural environment
- Cost
- Physical constraints
- Behavior change
- Community goals/values

The team then explored these criteria with the goal of identifying the data needed to support the finding for an unreasonable solution. Table 1 summarizes this discussion. As a result of the discussion two of the issues were eliminated from further consideration. These two were physical constraints and behavior change. The team felt that physical constraints are closely related to cost and/or natural environment and was therefore a duplicative category. In the case of behavior change the team did not feel that there was sufficient data available from the CTP process to

provide an adequate unreasonable alternative justification to transfer to the NEPA/SEPA process. This remaining four criteria, failure to meet purpose and need, impact to the natural environment, impact to community/cultural resources, and failure to address community goals and values, provide the framework for a CTP-based unreasonable alternative justification.

The team also looked at the CTP process to identify the CTP steps where there might be enough information to trigger an unreasonable alternative discussion by CTP technical staff and/or decision-makers. These CTP steps are:

- CTP1a - Call/Hold Initial Meeting¹
- CTP1e - Develop CTP Plan Goals and Objectives
- CTP3b - Identify Key Priorities
- CTP3c - Evaluate Alternatives
- CTP3e - Evaluate CTP Scenarios

In addition, the team identified the Merger 01 (NEPA/SEPA) process steps where information related to CTP-based unreasonable alternatives should be considered. These steps are:

- Compile Purpose and Need Statement
- Develop Environmental Features Map
- Identify Corridors

Table 2 below summarizes the products from the CTP that document an unreasonable alternative.

The team developed detailed implementation plans for linking CTP-based unreasonable alternatives to project development based Alternatives Selected for Detailed Study. Implementation plans were developed for training and education; best practices and process standards; and documentation format and standards.

¹ This is the CTP scoping meeting where all process partners and interested parties provide input to the overall CTP process. The team envisioned that any attendee could identify a “pristine” resource to be avoided at all costs. This does not mean that the CTP development team and decision-makers will accept this constraint, but the team felt the opportunity should be provided at this earliest possible stage of CTP development.

Table 1. Data Needed to Support “Unreasonable” Alternatives

Question to be Asked Regarding “Unreasonable” Alternative(s)	Data Needed to Support “Unreasonable” Alternative(s)
Purpose and Need	
<p>How does the “unreasonable” solution fail to meet Purpose and Need</p> <ul style="list-style-type: none"> • What supporting data justifies that the solution is “unreasonable”? • What aspect of the Purpose and Need does this solution fail to meet? • Why was this modal solution determined to be “unreasonable” based on Purpose and Need? 	Community vision/goals
	Economic development
	Modal interrelationships
	Modal considerations
	Capacity
	Transportation demand
	Security
	Local key priorities
	Documentation of adequate public involvement
	Safety
	System linkage Transportation system deficiencies
Community/Cultural Resources	
What impacts to community resources make this solution unacceptable?	Established communities and neighborhoods
	Locally identified special areas (red flags) (i.e., Horn in the West, Lowe’s Motor Speedway. universities, major industrial facilities, major retail centers, transportation facilities)
	Section 4(f) properties
	Section 6(f) properties
	Public lands (i.e., Corps of Engineers, Tribal Lands, Department of Defense
	Transportation system deficiencies
	Local long range plans
Natural Environment	
What impacts to the natural environment make this solution unacceptable?	Rare natural features (i.e., mountain bogs, mafic depressions, tidal marshes)
	Watershed waters (WS I, WS II)
	Threatened and endangered species (includes critical habitat)
	Mitigation sites (EEP)
	Superfund sites
What physical constraint makes this solution unacceptable?	Mapping
Goals/Values	
What creates conflict and the transportation solution?	Adopted plan
	Community involvement
	Community vision

TABLE 2. SUMMARY OF CTP UNREASONABLE ALTERNATIVES PRODUCTS

Product	Description	Comments
Alternatives Recommended for Elimination from Study Report	<p>Individual report for any alternative that was studied during the CTP and eliminated as “unreasonable” or “fatally flawed.” Four unreasonable solution criteria with associated questions to be answered were identified:</p> <p>Failure to meet purpose and need</p> <ul style="list-style-type: none"> ▪ What supporting data justifies that the solution is unreasonable? ▪ What aspect of the P&N does the solution fail to meet? ▪ Why was this modal solutions determined to be “unreasonable” based on the P&N? <p>Community/Cultural Resources</p> <ul style="list-style-type: none"> ▪ What impacts to community resources make this solution unreasonable? <p>Natural Environment</p> <ul style="list-style-type: none"> ▪ What impacts to the natural environment make this solution unacceptable? ▪ What physical constraint makes this solution unacceptable? <p>Community Goals and Values</p> <ul style="list-style-type: none"> ▪ What creates a conflict between the community’s goals and values and the unreasonable transportation solution? 	<p>It is anticipated that this report will include most of the background information detailed in the Alternatives Recommended for Further Study report. In addition, however, the purpose of this report is to provide sufficient justification to allow the NEPA practitioners to reference this information (after evaluating the need for updating of information) as NEPA documentation for an eliminated alternative</p> <p>For each of these categories and questions the data and stakeholder involvement information has been detailed.</p>

Land Use to Indirect and Cumulative Impact (ICI) Assessment

In the spring of 2005 the Integration Team analyzed the connections between land use information available as a part of the CTP process and the indirect and cumulative impact assessments required during project development. There were two goals for this integration workshop. First, the team wanted to develop an approach that would integrate indirect and cumulative considerations into the long range planning process including both the CTP and the land use sub-processes that have been developed by NCDOT and its partners. Second, this CTP “indirect and cumulative impacts” assessment needed to be connected to the project level ICI required during project development, specifically NEPA.

In 2002 NCDOT and North Carolina’s state environmental agency, the Department of Environment and Natural Resources (DENR), partnered to develop indirect and cumulative impact assessment guidance which has been adopted by both agencies for use in transportation project NEPA analysis. This guidance was used during the workshop to help frame the discussions for a systems-level approach to ICI analysis.

CTP (Long Range Planning) Level ICI

The goals for the development of an ICI-related technical procedure for the CTP process is:

- 1) to create data related to environmental impacts associated with potential land use scenarios and/or land use changes associated with potential transportation alternatives;
- 2) to integrate this data into the CTP decision-making process.

The creation of this explicit technical procedure provides the support for technical and policy decision-makers to identify, adopt and document ICI-related avoidance and minimization strategies during long range planning.

Using the new CTP process and the land use sub-process as the framework for the discussion, the team identified each step where ICI needed to be discussed during the CTP process. For each of the 18 steps, they identified why ICI needed to be discussed (the purpose) and what the output of the discussion was intended to be (the outcome).

Once these steps and their associated purpose and outcomes were identified the team detailed the following information **for each of the 18 steps**:

1. What data is needed to support the ICI technical process?
2. What decisions, if any, are made and who is making those decisions?
3. If there is ICI-related stakeholder involvement, then what is the purpose and the outcome for this stakeholder involvement?
4. What level of documentation is needed (including in most cases the recommended format)?

The technical procedure that the Integration Team established integrates ICI discussions throughout the long range planning process. Such explicit and robust consideration of the ICI-related issues assures that decision-makers are aware of the land use change implications associated with the adopted CTP. This summary will not include a discussion of each of these 18 steps, but there are a few steps that warrant explicit discussion in this summary:

Evaluate/Establish Common Land Use Goals and Objectives (Land Use Process step LU10)

In this step of the land use sub-process occurs very early in the CTP process—prior to the development of goals and objectives for the overall transportation plan. The overall purpose of LU10 is to evaluate the quality and overall consistency of all the land use plans that will serve as a fundamental component of the CTP. The ICI technical procedure assures that this evaluation will include a review of the environmental “friendliness” of the underlying land use plans, and the highlighting (or “red flagging”) of environmental problems associated with the land use plans that are the basis for transportation planning.

This explicit review allows the CTP team the opportunity to identify these land use associated environmental issues to both technical and policy decision-makers before substantive transportation planning begins. This provides an opportunity for these decision-makers to consider more environmentally friendly land use scenarios as a part of the CTP process (which can support the evaluation of up to four different land use scenarios) or potentially to “fix” the land use plan before the CTP process proceeds. It also allows the CTP team to include land use “red flag” issues in meetings and discussions with the public so that there are no surprises for stakeholders about underlying issues and assumptions for the final CTP.

Identify Measures of Effectiveness and Develop Evaluation Criteria (CTP1f and 1g and LU 11 and 12)

The purpose of these steps is to translate high level transportation goals and objectives into the measures and criteria that will be used to evaluate CTP alternatives that are considered by the technical and policy decision-makers. The team recognized that if ICI were not an explicit component of these two steps that it was unlikely that decision-makers would include the potential land use impacts of the transportation alternatives as a part of their substantive alternatives discussions. With this in mind the Integration Team identified the development of ICI related measures of effectiveness and evaluation criteria as critical to successful integration of ICI into CTP decision-making.

Draft Implementation Strategy (Financial Plan)(CTP4a)

When the CTP was originally developed, step CTP4a was included to assure that the required financial constraints are reflected in the overall implementation strategy that is discussed and approved by the policy makers when the CTP is adopted. The Integration Team has recommended that this step be expanded beyond financial constraints to discuss broader CTP implementation issues, specifically ICI-related minimization and mitigation strategies that local governments should consider implementing as a part of local government controlled land use planning and land development administration. Some of the strategies that the team provided as examples were inclusion of high environmental quality open space, buffers or wildlife corridors in adopted land use plans and protection of these environmentally beneficial areas through zoning administration.

Integration of CTP ICI analysis with Project Development (NEPA)

The detailing of the CTP ICI technical process allowed the team to identify and understand the potential outputs from systems planning that would be available and useful to inform the project level ICI analysis required by NEPA. The integration of these two processes has two goals:

1. To identify and provide documentation of land use related avoidance and minimization decisions that are made during long range transportation planning.
2. To identify information from systems planning that can be used during project level ICI assessment with the goals of improving the quality of the ICI impact analysis (stewardship) and/or reducing the time to complete the ICI impact analysis (streamlining).

The table below shows the anticipated products created during the CTP that support or are available to the project based NEPA process.

SUMMARY OF LAND USE RELATED CTP PRODUCTS

PRODUCTS	DESCRIPTION	COMMENTS
Land Use Summary Report	<ul style="list-style-type: none">▪ Individual report for selected deficiencies detailing data that will be useful as a starting point for NEPA based ICI analysis. Beyond considerable background information, this report includes documentation of avoidance and minimization strategies that have been taken during long range planning.	<ul style="list-style-type: none">▪ Primarily GIS level environmental data
The creation of this summary report is supported by two CTP based products:		
CTP ICI Technical Procedure	<ul style="list-style-type: none">▪ ICI technical procedure that collects and integrates ICI data into the overall CTP technical and decision-making processes	<ul style="list-style-type: none">▪ This technical procedure assures that the overall CTP is sensitive to ICI
Explicit education about ICI (what it is and why it is important) of technical staff and policy decision-makers involved in CTP	<ul style="list-style-type: none">▪ Detailed education process that identifies what staff and policy makers need to know about ICI, when they need to know it (in the overall CTP process), and the best education mechanism	

The education product was considered a critical success factor for making this linkage work. During scoping for the Integration Project, it was clear that long range planning transportation professionals and policy makers do not understand the concepts or the implications of the project level indirect and cumulative impacts. For this reason the Integration Team has developed an

education process that can be conducted during the CTP process. For this work the team identified all the steps in the CTP process and the land use sub-process where there is an opportunity to educate process participants about ICI. For each of these 19 steps the team identified the audience (technical staff, policy makers or both), the basic information that should be presented (the “what”), and recommended mechanisms to deliver the information (the “how”). This information is summarized in the workshop booklet in a table called “Educating CTP Participants in ICI.”